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ABSTRACT

Some of the problems facing undergraduates learning Russian can be dealt with effectively by using an online computer. A Russian numerals drill program (RUNEX) is described which aims to help the student in tackling the morphological arbitrariness and some aspects of the syntax of the Russian numerals. Paradigms are given for the numerals five, two, and one, and the two modes in which RUNEX operates are presented. The use of program arrays, the adoption of FORTRAN to write the program, and the division of the set of numerals (1-49) into subsets are discussed. An appendix presents a sample output from program RUNEX. (Author/AMH)

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ON THE TEACHING OF RUSSIAN NUMERALS BY USING AN ONLINE COMPUTER

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Abstract

Some of the problems facing undergraduates learning Russian can be dealt with effectively by using an online computer. A Russian numerals drill program is described which aims to help the student in tackling the morphological arbitrariness and some aspects of the syntax of the Russian numerals.

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The use of computers in the undergraduate teaching of foreign languages, like Russian, has been growing over a period of years. Carter and Silberman [1] developed a computer-based elementary Spanish course. Langer and Seybolt [2] strongly recommend their undergraduate students to use a Computer Assisted Instruction package for Spanish Grammar. Alford [3] has extensively used a computer-based dictionary which can be referenced, 'without the dead time and distraction normally inseparable from this function'. Alford has concentrated on the teaching of Russian to specialist groups such as physicists and mathematicians. The use of a computer-controlled 'mnemonic keyword method', for acquiring vocabulary in Spanish and Russian [4] has also been cited in the literature. Shibayev [5] has also suggested that certain areas of Russian grammar can usefully be presented in a computer-based program.

In this paper we describe the progress made so far in the undergraduate teaching of one subset of Russian grammar in an interactive environment, using an online computer. The subset was chosen in view of its morphological arbitrariness and consequent learning problems which it causes.

REASONS FOR CHOOSING NUMERALS

Russian is an inflected language which distinguishes six cases: nominative, accusative, genitive, dative, instrumental, and locative. Numerals distinguish these six cases but their form is not determined solely by case - in some instances it is affected by the noun with which it is associated. The student must of course be able to produce the correct forms in the correct environment. As we shall see, some forms have analogous forms elsewhere in the language, some are completely irregular. Numerals are therefore a suitable subject for our purposes because:

1. Given sufficient information (case required and features of associated noun) there is one 'right' form. The computer can therefore be given a look-up table.

2. The choice requires logical steps which can be made explicit in the program.

3. The irregularities give problems even to advanced students and so help in this area is likely to be used and appreciated.

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We will now illustrate these points briefly. The paradigm for the numeral pyat' (five) is:

Nominative	PYAT'
Accusative	PYAT'
Genitive	PYATI
Dative	PYATI
Instrumental	PYAT'YU
Locative	PYATI

This paradigm gives the student few problems. It is similar to nouns of a certain class, and the form depends solely on the case. However, if we turn to dva (two) we find a more complicated picture:

	Masculine	Feminine	Neuter
Nominative	DVA	DVE	DVA
Accusative	as Nom. or Gen.		
Genitive		DVUKH	
Dative		DVUM	
Instrumental		DVUMYA	
Locative		DVUKH	

Here the gender of the following noun is required: thus we have dva mal'chika (two boys) but dve devochki (two girls). In cases like the genitive, gender is irrelevant but here the student has the problem of learning irregular forms which are found only in numerals. The greatest difficulty occurs in the accusative case. The choice of form depends on the animacy of the following noun. If the noun is animate (a person, animal, or insect) the numeral takes the form of the genitive; if inanimate, the form of the nominative. In the latter situation the gender of the following noun is required.

The most complicated example is the numeral odin (one) which has the following paradigm:

	Masculine	Feminine	Neuter
Nominative	ODIN	ODNA	ODNO
Accusative	as Nom. or Gen.	ODNU	ODNO
Genitive	ODNOGO	ODNOY	ODNOGO
Dative	ODNOMY	ODNOY	ODNOMY
Instrumental	ODNIM	ODNOY	ODNIM
Locative	ODNOM	ODNOY	ODNOM

This paradigm is similar, but not identical, to that of certain adjectives. The gender of the noun must be known for all cases, though in most cases it is sufficient to know whether it is feminine or not. The choice of accusative form depends on animacy only in the masculine: thus gender takes precedence over animacy, the converse of the situation with dva. Figure 1 illustrates this algorithm.

The numerals we have considered illustrate the combination of rote learning and logical thought which are required of the student and for which the computer can serve as a prompter.

LEARNING TASKS 'SAM' AND 'IVAN'

RUNEX (RUssian Numerals EXercise) operates in two modes: SAM (Russian for 'self') and IVAN.

The SAM mode in which the student can ask RUNEX questions, operates on the principle that at every 'decision' stage the student is asked a question, as to which category of numeral he/she would like to choose and hopefully the student will assimilate some of the principles governing the numerals within that particular category.

The IVAN mode on the other hand asks the students to give the correct form to a certain numeral, e.g. the student may be asked to give

(i) Accusative of numeral 5
or (ii) Nominative feminine of 1
or (iii) Accusative masculine animate of 2, etc.

The choice of numeral and its category must be different each time and should be random. RUNEX has the facility to randomize this choice by using the various time clocks built into the computer, e.g. time of the day in minutes and seconds, total time used by all users, the amount of time used by the central processing unit (cpu) etc.

Before the students come to use RUNEX, the lecturer in charge gives them a brief description of the program and provides them with a copy of the students' manual. [6] The students then go on to 'run' program RUNEX on visual display units with the help of the manual, which outlines the program, explains how to correct typing errors, and gives the transliteration convention used. It is also suggested to 'first-time' users that they should use the SAM mode, in order to familiarize themselves with the computer input/output format. In the IVAN mode the student has an option to keep a record of his/her performance. (See Appendix A for a sample run of the program.)

PROGRAMMING ASPECTS

A lookup table was stored in the computer memory for all numerals between 1 and 49 and the information (i.e. numerals for all cases and interacting categories of gender and animacy) was stored in the form of program arrays. The indices of these arrays refer to the numeral, its case, etc. Given the limitation of the computer systems available (a mini, PRIME 300) and the structure of the paradigms, the use of arrays appears to be a quick and efficient method of storing and retrieving numerals.

The programming language FORTRAN (ANSII version) was used to write the program RUNEX. Considerable effort has been made to write RUNEX in a machine independent way so as to make the program generally available to interested users having a mini (or mainframe) computer. The decision to use FORTRAN needs some justification as it is not among the better higher level languages for manipulating character strings. More exotic languages like PASCAL and SNOBOL were not available and so the remaining alternative would have been to use assembly language. However, using a much higher level language or assembly language would severely have restricted the general availability of the program and would have made future improvements practically impossible, unless done by the original authors.

The set of numerals (between 1 and 49) is divided into the following subsets:

1. Subset A, which is further subdivided into two subsets
   a) A1, containing the numerals 1, 21, 31, and 41
   and b) A2, containing the numerals 2, 22, 32, and 42

2. Subset B, which contains the numerals 3, 4, 23, 24, 33, 34, 43, and 44.

3. Subset C, which contains all the numerals between 5 and 20, and 25-30, 35-40, and 45-49.

All the subsets, and their further branchings (e.g. Figure 1) are arranged in such a way that they have the same endings. As the different numeral forms vary in terms of the numer of letters they contain, this gives rise to the problems of storing them in such a way that they should be quickly retrievable; moreover the 'format' has to be clearly specified for the input/output operations. On the computer systems available there are restrictions on how many letters (or characters) one can assign to a given program array element. The maximum is 8 characters if a double 'word' (i.e. computer storage unit) is used, 4 if a single 'word' is used, or 2 if an 'integer', i.e. half 'word' is used. To store numerals 1-10 a single and double 'word' were used, for numerals between 10-20 two double 'words' were used. Finally for numerals between 21-39 two double 'words', one single and one half 'words' were used, etc. Separate FORTRAN READ/WRITE format statements were written for each of the subsets of numerals.

SUMMARY AND FUTURE AIMS

Student trials of program RUNEX have been successful, and the program has been modified in view of their critical comments. The students found it fairly easy to operate the visual display units (vdu) and were quick to learn the instructions for correcting typing errors. It is hoped that during the next academic year (1977-78) RUNEX will be used in addition to the other available teaching aids.

Work is also in progress to input and output cyrillic characters on an ordinary vdu, using a microprocessor, which will certainly enhance the utility of program RUNEX.

In addition to RUNEX, it is hoped that the drill program ADJECT, to teach Russian adjectives, will also be operational next year. Other subsets of Russian grammar, for example verbs, are also under consideration.

It is difficult to compare computer aided learning (CAL) with conventional teaching aids/methods; a topic which is very controversial,[7] and the assessments of performance of CAL packages are often quite subjective. Not wishing to enter any controversy, we would simply like to say that computers appear to be a valuable addition to other teaching aids, especially where drill exercises are to be conducted.

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APPENDIX A

Sample output from program RUNEX

```
LOGIN CLVJGC
CLVJGC (13) LOGGED IN AT 15'33 07057

PASSWORD?
WELCOME CLVJGC TO SURREY PRIME 300 CAL SYSTEM
OK, R *RUNEX (student types)
GO
-----------------------------------------------------------------

HELLO, MY NAME IS RUNEX, AND I KNOW SOME RUSSIAN NUMERALS.  YOU HAVE
TWO OPTIONS:
            (1) THE SAM MODE, IN WHICH YOU CAN ASK RUNEX SOME QUESTIONS
     OR     (2) THE IVAN MODE, IN WHICH RUNEX WILL ASK YOU SOME QUESTIONS

-----------------------------------------------------------------

IF YOU WANT TO WORK IN THE SAM MODE, PLEASE TYPE SAM, OR IF YOU WANT
THE IVAN MODE PLEASE TYPE IVAN THANK YOU
SAM (student replies)
THANK YOU.  YOU HAVE CHOSEN TO ASK ME SOME QUESTIONS, AT THE MOMENT
I KNOW NUMERALS UP TO FORTY NINE ONLY, I APOLOGIZE TO THE ENTHUSIAST
FOR NOT KNOWING ENOUGH
PLEASE TYPE YOUR QUESTION IN THE FOLLOWING FORMAT .....
THE NUMERAL FIRST, THEN THE CASE, E.G.
                              2        (PRESS THE RETURN KEY)
      (THEN TYPE)         LOCATIVE     (PRESS RETURN)
GO AHEAD PLEASE
1
THE NUMERAL YOU HAVE CHOSEN IS 1
NOW PLEASE GIVE ME THE CASE
ACCUSATIVE
PLEASE INDICATE THE GENDER
MAS
PLEASE INDICATE ANIMATE OR INANIMATE BY TYPING ANI OR INA.
INA
THE NUMERAL YOU WANTED IS
                    -----------
                    - ODIN    -
                    -----------


.....NAPRIMER
V ODIN PREKRASNYY DEN*
DO YOU WANT TO ASK ANY MORE QUESTIONS? PLEASE TYPE YES OR NO
YES
THE NUMERAL FIRST, THEN THE CASE, E.G.
                              2          (PRESS THE RETURN KEY)
     (THEN TYPE)          LOCATIVE      (PRESS RETURN)
GO AHEAD PLEASE
10
THE NUMERAL YOU HAVE CHOSEN IS 10
NOW PLEASE GIVE ME THE CASE
ACC
THE NUMERAL YOU WANTED IS
                    ------------
                    - DESYAT*  -
                    ------------
```

```
....NAPRIMER
FERMER PRODAL SVOIKH DESYAT*    BYKOV
....ILI
CHEREZ REKU POSTROILI DESYAT*   MOSTOV
DO YOU WANT TO ASK ANY MORE QUESTIONS, PLEASE TYPE YES OR NO
NO
--------------------------------------------------------------------------------

WOULD YOU LIKE RUNEX TO ASK YOU SOME QUESTIONS, PLEASE TYPE YES OR NO
YES
HELLO, I GATHER YOU ARE READY FOR A NUMERALS EXERCISE
WOULD IT BE A GOOD IDEA IF YOU WERE GIVEN A SCORE AT THE END OF EACH EXERCISE
YES
CAN YOU GIVE ME THE NOMINATIVE MASCULINE OF NUMBER 1
ODNA
YOUR ANSWER IS INCORRECT, THE CORRECT ANSWER IS
                    -------------
                    -   ODIN    -
                    -------------

IN ROUND NUMBER 1 FOLLOWING WAS THE SCORE
-----------------------------------------
-      YOUR POINTS  -    MY POINTS      -
-----------------------------------------
-          0        -         1         -
-----------------------------------------

DO YOU WANT TO HAVE ANOTHER GO.  PLEASE TYPE YES OR NO
YES
CAN YO  IVE ME THE ACCUSATIVE ANIMATE
OF NUMBER 22 ** MASCULINE PLEASE **
DV/ SATDVUM
YOUR ANSWER IS INCORRECT.  THE CORRECT ANSWER IS
                    ----------------------
                    -  DVADTSAT* DVA    -
                    ----------------------

IN ADDITION TO THE ABOVE ANSWER A COLLOQUIALLY ACCEPTABLE ANSWER IS
                    ----------------------
                    -  DVADTSAT* DVUKH  -
                    ----------------------

IN ROUND NUMBER 2 FOLLOWING WAS THE SCORE
-----------------------------------------
-      YOUR POINTS  -    MY POINTS      -
-----------------------------------------
-          0        -         2         -
-----------------------------------------

DO YOU WANT TO HAVE ANOTHER GO.  PLEASE TYPE YES OR NO
YES
CAN YOU GIVE ME THE DATIVE OF NUMBER 5
PYATI
YOUR ANSWER IS CORRECT
IN ROUND NUMBER 3 FOLLOWING WAS THE SCORE
-----------------------------------------
-      YOUR POINTS  -    MY POINTS      -
-----------------------------------------
-          1        -         2         -
-----------------------------------------
```

```
DO YOU WANT TO HAVE ANOTHER GO.  PLEASE TYPE YES OR NO
NO
DO YOU WANT TO ASK RUNEX SOME QUESTIONS, PLEASE TYPE YES OR NO
NO
THANK YOU FOR YOUR TIME BYE NOW

OK, LOGO
CLVJGC (13) LOGGED OUT AT 15'45 07057
TIME USED = 0'12 0'03 0'05
GOODBYE

OK
```

REFERENCES

1. L. Carter and H.F. Silberman, SDC Document No. SP-2025 (1965), Systems Development Corporation, Santa Monica, California, USA.

2. B.J. Langer and R.A. Seybolt, in Proceedings of 1976 Conference on Computers in the Undergraduate Science Curriculum, pp. 277-280 (1976), ed. T.C. Willoughby, State University of New York, Binghamton, New York, USA.

3. M.H.T. Alford in 'Assistance in Learning to Read Foreign languages' (1971), Literary and Linguistic Computing Centre, University of Cambridge, UK.

4. R.C. Atkinson and M.R. Raugh, J. Exptl. Psych. (Human Learning and Memory) 126, 104 (1975).

5. V. Shibayev in 'The Carlex Computerised Analytical Dictionary'. Paper read to the Conference on the Use of Computers in Literary and Linguistic Research' (1974), University College Cardiff, UK. Unpublished.

6. K. Ahmad, M. Colenso and G. Corbett, Students' Manual for Program RUNEX (1977), University of Surrey, Guildford, Surrey, UK.

7. J. Pocztar in The Theory and Practice of Programmed Instruction (1972), UNESCO, Paris, France.